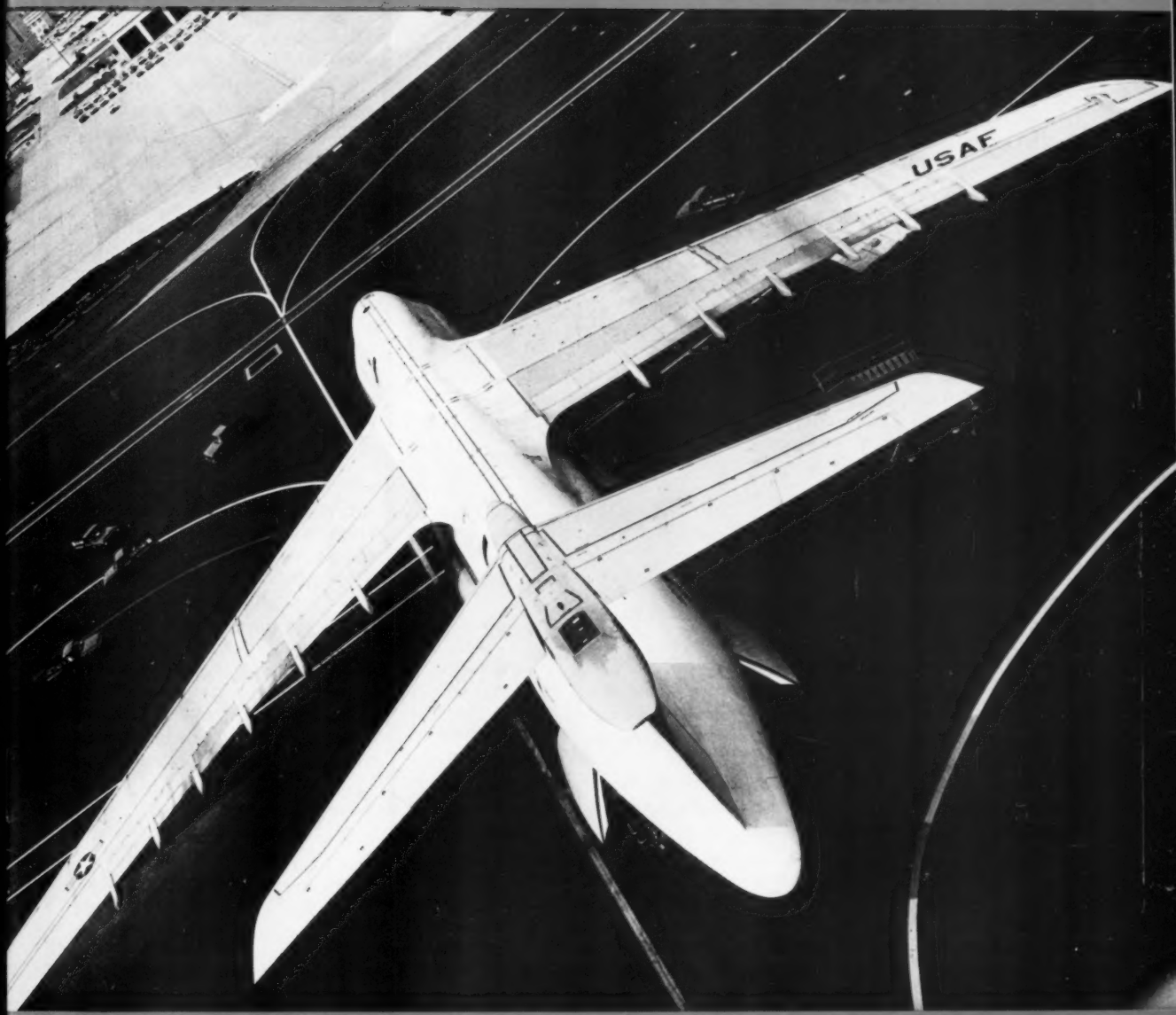
The MAC Flyer

AUGUST 1973



MILITARY AIRLIFT COMMAND

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For Greater Efficiency
in MAC Air Operations

The MAC Flyer

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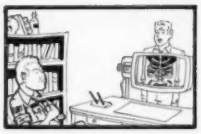

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COVER: Maintenance crews prepare a C-5 for another mission. This photograph was taken by Sgt Bob Tarleton from atop a 125-foot maintenance platform on the Dover AFB flight line.

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Squawk Box

The summer PCS season is nearly over and, like so many other outfits, THE MAC FLYER has experienced its share of personnel changes. A new supervising editor, associate editor, and art director have just eased into their new jobs; so if you've been a steady reader, you might detect a change or two in this and subsequent issues.

The two new editors are fresh from line flying units, and feel a close identity with those who are still out there where the action is. We'd like to keep that feeling.

* * *

If at first glance you didn't recognize the big bird on the cover, don't feel left out. It is a somewhat unusual photograph of the Galaxy and places it in a different perspective. This thought ties it to the theme which threads through this month's issue, the aircrew-maintenance relationship. Four articles address the inter-relationship between you, the aircraft you fly, and maintenance problems or practices affecting both. One deals with corrosion on the C-5. It is written in aircrew lingo, so don't let the subject turn you away.

For those who read strictly for entertainment, disdaining any attempt at subtle tutelage, take a look at "The Magic Word." This is a tongue-in-cheek spoof at our omnipotent MAC flight examiners and their fumbling examinees. The message is clear and the reading is easy. The whimsey was written by Lt Col John Livingstone, a man who has been on both ends of that big stick.

What can you say when poor planning plunks you right in the soup with minimum navaids? For MAC crewmembers, there's always...

The Magic Word

by Lt Col John R. Livingstone
MAC/DOV

Once upon a time in the little village of McDovertown there was a large air transport base. The air base was named Travortoncord after a famous flight engineer who in the course of accumulating 25,000 accident-free flying hours had consumed 50,000 flight lunches. (This represents enough food to supply the village for three years, and Travortoncord's gastronomical record is challenged yearly by members of the flight engineers' BLBA —Box Lunch Biters Assoc.

McDovertown is a beautiful little village nestled in the center of the eastern seaboard resort area, and it was chosen as a site for the Travortoncord base because of its scenic beauty and its accessibility by all forms of commercial transportation.

* * *

Early one frosty morning (the pumpkins were covered as in the famous poem) a crew is called out to fly. Each of the airmen receives a personal loving call from Major Nancy Sweettalker, the crew alerter at Travortoncord.

"Good morning my darlings, another beautiful day to do your thing and, as usual, departure time is 10 a.m. Pack your baggies and drop in around eightish. It's Oktoberfest in Europe; have a beautiful trip."

Meanwhile, back at the Hub (a wheelhouse with numerous little spokes on a regular milling schedule), the crew orders are prepared:

Basic Crew Position	Crew Qualification	Name
Chief Pilot in Charge	Super Pilot	Moe Manyleftfoots, Capt
Pilot's Little Helper	Sr. Copilot	Charlie Chewslow, 2d Lt
Head Navigator in Charge	1st Order Magellan	Norman Neatnav, 1st Lt
Chief Gage Watcher	Master Engineer	Edgar Eager Eng, MSgt
Gage Watcher's Helper	Asst. Engineer	Bobby Bunksores, TSgt
Venerable Cargomaster	Ancient Examiner	Sam Hadaload, CMSgt

As the crew assembles, Moe exchanges a few pleasantries. He speaks: "Hey, youse guys, you been through this drill before. Let's kick the tires and light the fires. The bratwurst is awaiting."

Without further ado, the duty cargo master for the day loads their bags and drives them to the large century series swept wing aerospace vehicle. The duty cargo master puts the bags on the airplane, while Moe, Charlie, Norman, Edgar, and Sam check the 781. (Bobby goes to count the tires.) Since, as usual, there are no write-ups in either the 781A or K, Moe, Norman, and Charlie go back to the Hub to file for the oceanic crossing.

After exchanging bon mots with the little wheel in the window, they settle into the filing process. Moe and Charlie go to see Lt Winnie Weatherguesser (a real stormer) while Normie fills out the fuel portion of his flight plan. Moe tells him that he need not check the weather, because after all, weather and taxes are two things you can't do anything about anyway. The Hub has done the rest for them. Their ICAO flight plan for crossing the North Atlantic track is completed and all Moe has to do is sign it. So he does. After tea and crumpets, an air conditioned limousine takes them back to the aerospace vehicle for their preflight. One hour till go time. Shortly after arriving at their aerospace machine, Norman gets a rude surprise. His doppler is inoperative! In 500 preflights, this is his first equip-

ment malfunction. He chastised the crew chief. Poor crew chief, he is so chagrined as he goes to call avionics maintenance. The cheerful, natty avionics men arrive dressed in blue, two-piece coveralls with white dickies. Oops! A slight fuel leak has been uncovered by Edgar, and the avionics troops have to wait to go to work.

Time marches on. It is now thirty minutes to go time.

Moe is getting nervous. It keeps getting closer and closer to go time. Norman gives the 10 minute warning. The fuel leak is cleared and . . .

What's this? A large blue car pulls up and who should step out but Colonel Darling (known to the crews as Darling Officer or DO for short). Sitting in the car was his faithful maintenance companion, Major Yezzer. Darling speaks.

"Moe baby, what's your problem?"

"Oh sir, our doppler broke. But they are going to fix it."

"Balderdash, Moe. I remember when we found our way all over the globe with nothing but a whiskey compass and a sextant." (From the car a faint "Yezzer," followed by a fleeting smile on DO's face.)

"But Colonel Darling . . . "

"Moe, we just can't have a late takeoff. You can make it, baby."

"But, sir."

"Moe, beat it."

"Yezzer," a fleeting smile from the car.

Airborne. Another on-time takeoff. Time passes slowly as they move from VOR to VOR. Charlie calls Gander.

"Gander, this is MAC 1000, FL 330, estimating Gander at 1120. Standing by for Oceanic clearance."

"Roger MAC 1000, you're cleared to destination via Track Whiskey, FL 330 maintain Mach .77."

"Hey, Norm. What the hell is Track Whiskey? The Hub filed us for Bravo."

"I don't know — my flight plan is for Bravo."

"Gander, MAC 1000, confirm track Whiskey. We filed for Bravo."

"MAC 1000, Whiskey confirmed, Bravo was active yesterday."

Moe is stunned. A mistake from the Hub. Unheard of, but . . . true! He turns to Norm.

"Norm, do you have the coordinates for the Whiskey route?"

"Nozir."

"Charlie, be a good boy and get the damn track coordinates would you?"

"Yezzer."

(Timidly). "Gander, MAC 1000, could you give us the route coordinates."

"Okay, 1000, this is Gander. Track Whiskey coordinates are as follows: 50N, 50W; 52N, 40W; 52N, 30W; 52N, 20W; 52N, 15W, direct Shannon.

"Thanks Gander. (Read back clearance.) 1000 out."

Norm's in trouble. Seems he neglected to preflight his sextant and the index discs do not zero out. He is afraid to tell Moe. Time passes. Norman uses loran-c to fix. He tries using first one compass and then the other to feed his computer, but large errors result. He wishes he had a sextant to check his heading. Working feverishly, he misses calling the boat. He works harder, and harder, and harder. Soon they run out of SL7 loran range. Norm confidently switches to SL3. He is unable to receive usable signals. He wishes he had anything. Then . . . "Hey, Norm, what's this on the scope? Looks like a big line of thunderstorms."

"Moe, you didn't tell me that there was going to be weather out here today."

"Come on, Norm, what difference did it make? We were going anyway."

"Moe, we are on limited navaids now. I'm not sure of our position within 50 miles."

"Take out your sun gun, sonny. You heard the colonel."

"I can't Moe. It's broke."

Boy, does that get Moe's attention! He chews on Norman. Rattle, rattle, crash! Bang! Our heroes hit a big bad bumper. A few seconds of sheer terror later they recover enough to alter their way through the storms. Norman's navigation is negated.

As suddenly as they entered the thunderstorm area, they break into the clear. No navaids. No position. Norman is nervous. Moe is mortified, and Charlie doesn't know what the hell is going on. (Edgar, always a good BLBA man, munches on manfully.)

A conference ensues. What shall we do? What shall we do? Norman suddenly remembers the old timers at the bar talking about the "Magic Word." He asks everyone on the flight deck if they know the word. No one knows. The word has been lost Sgt Bunksore awakes, puts his hand in his flight lunch, and says:

"Lieutenant Neatnav, have you checked with old Sam?"

"No, but if anyone knows, that old rascal should."

Out to the crew bunks flies Normie. He wakes Sam up. Sam growls.

"Sonny, I've only been asleep six hours, what do you want?"

"Oh Sam, Sam, we are lost and in trouble. Do you remember the 'Magic Word'?" It is Sam's turn to be stunned. Use of the Magic Word by a crew of which he is a member? It would be a first in his 30 years of cargomastering. Then his attitude toward Normie changes, and the genial geriatric

gentleman whispers in his ear.

"Bless your gray old head," Norman says.

Norman goes back to the flight deck. Stands on one leg in the middle of the cockpit. Puts his hands over his eyes and shouts: **"MOTHER MACZAMINER!"**

There is a brilliant flash of light. The slight odor of ozone permeates the air, and there, next to Norman, stands a real live Big Fella. An honest to goodness MACZAMINER. Dressed in a pure white flight suit with a 100,000 hour patch. Gently he says:

ABOUT THE AUTHOR

Lt Col John Livingstone, assigned to MAC/DOVN at Scott AFB, has been a regular contributor to The MAC Flyer but this is the first time he has entered our writing contest. Lt Col Livingstone has extensive experience in Old Shakey, the Starlifter, and the Galaxy, and is most noted for his development of the navigator portion of the C-5 aircrew training syllabus for the 443 MAW at Altus AFB, OK.

"Norman, I'm here to help you."

Norman is touched. His eyes fill. Awe, love, relief, and admiration light his face. Chokingly, he says, "Big F . . Fella, I . . . I have troubles. We . . . "

"I know, I know. My all seeing eye has been on you. I had hoped you would call."

Seating himself confidently at the nav station, the MACZAMINER calls the pilot.

"AC, Nav."

"Yes, sir."

"Come up 12345 and ask any commercial aircraft in the vicinity

of 20 West to give you his current winds. See if someone is at 330. There should be someone about 60 miles in front of us. Have the copilot call in position unreliable and minimum navigation aids. No Loran C, no doppler, and sextant presently unusable."

"Yes, sir."

While the radio calls are being made, the MACZAMINER has Norm take a console reading. He loosens the screw on the sextant and repositions the connecting shaft, thereby fixing the sextant. Then he quickly precomputes a celestial fix using the sun and Jupiter. While shooting, he has Norman take an aural null bearing on an Irish ADF station.

Lo and behold, in less than 15 minutes he has a four-LOP position, 65 miles south of track.

"Navigator, this is the pilot."

"Navigator; go ahead."

"MACZAMINER, sir, the winds at 330 reported by an aircraft immediately in front of us are 300 at 86. Shannon is aware of our problem."

"Thank you."

Using this best available wind, the MACZAMINER gives Moe a new heading to regain track, an ETA for track intercept, and a heading to fly for 15W after track intercept.

Time passes. At 15W, on time and on course, VOR navigation is established. Truly the MACZAMINER has saved the day.

After landing in Germany, he debriefs our heroes.

"First of all, you, Moe, did not fulfill your obligations in briefing the crew. You did not follow established procedures and have Norman check the weather. You failed to review North Atlantic Track procedures, and, further, did not verify your flight plan.

"Norman, if you had checked the notams, you would have known SL3 was off the air for your period of flight. An incomplete preflight is inexcusable. Even so, by reviewing AFM 51-40, Vol III, you could have repaired your sextant. You did not notify the pilot of your problems until pressed, and then you were well into the flight.

"Moe, you should know better than to swallow the 'Whiskey compass and sextant' routine. In today's crowded airspace, precision navigation is essential to air safety. Celestial navigation is fix-to-fix, after-the-fact navigation and is not conducive to the stringent requirements of centerline tracking.

"Certainly, as soon as you recognized your position was in error and that your navaids were

inoperative, you should have followed published procedures and notified the controlling agency of your problems.

"Norman, you failed to consider consolan as a fixing aid nor did you try for an aural null on any station. All three of you missed the boat both literally and figuratively.

"Moe, you have enough experience to know this is a crowded sky; you should have used the commercial frequency to obtain current winds. Also, you have ignored the responsibility of command. Crew coordination was nonexistent. Remember, your title is aircraft commander. This entire mission shows complacency and mismanagement at many levels. The MACZAMINERS rely on you — the crews — to be professional airmen every day. We have faith in you and your ability. Just remember to do it by the book, and you will be pressed to the bosom of the Mother MACZAMINER. Remember the words of Bobby Burns:

'Oh wad some power the giftie gie us
To see oursels as others see us!
It would frae monie a blunder free us,
And foolish notion.'"

With that he touched his 100,000 hour patch and disappeared.

Global Notes

world record

Twelve HC-130 crewmembers of the 57th Aerospace Rescue and Recovery Squadron have been nominated for the 1973 Harmon International Trophy (aviator category) for their world record unrefueled, nonstop flight in a turbo-prop aircraft.

The historic flight covered 8,790.5 statute miles from Ching Chuan Kuan AB, Taiwan, to Scott AFB on February 20, 1972. The old record of 6,842.5 miles was set by a U.S. Navy Lockheed P-3 Orion aircraft which flew from Atsugi, Japan, to Patuxent River, Md., in January, 1971.

The Harmon International Trophy, a symbolic bronze statue, is presented annually for the most outstanding international achievement in the art and science of aeronautics for the preceding year.

Crewmembers on the historic flight were: Lt Col Edgar L. Allison, aircraft commander; Majors Anthony V. Liparulo, navigator, and Kenneth S. Wayne, flight surgeon; Captains Carl E. Bennett, navigator; David E. Gardner, pilot, and Richard E. Racette, pilot; Technical Sergeants Robert K. Landry, crew chief; Morelle E. Larouche, flight engineer; William F. Litton, flight engineer; and Theodore F. Trainer, loadmaster; Staff Sergeants Pat E. Carrothers, radio operator; and William L. Hippert, radio operator.

award winners

Three MAC pilots earn Outstanding Individual Safety Awards.

Capt John N. Drexler, Det 15, 42 ARRSq, Luke AFB, was cited for his accurate analysis and quick action which led to a safe landing of his HH-43F after a bird strike had torn off one of the rotor blade flaps.

Capt Albert E. Tollefsen, 48 ARRSq, Fairchild AFB, was recognized for his thorough evaluation and expert pilot technique in successfully landing a UH-1N after experiencing loss of collective pitch control.

1st Lt Jerry M. Brewton, 40 ARRSq, Nakhon Phanom RTAFB, Thailand, was lauded for his outstanding airmanship following engine failure on his HH-43F. Lt Brewton landed his helicopter in a dry rice patty scattered with trees and dikes.

For their outstanding airmanship Capt Drexler and Lt Brewton were nominated for USAF Well Done Awards.

personnel changes

Capt Phillip R. Budd, a former associate editor, was presented with bound volumes of THE MAC FLYER published during his tenure on the staff. The July 1970 to July 1973 volumes were presented by Maj John W. Ray, Supervising Editor, in a ceremony held prior to Capt Budd's departure for assignment with the 11th Aeromedical Airlift Squadron at Scott AFB.

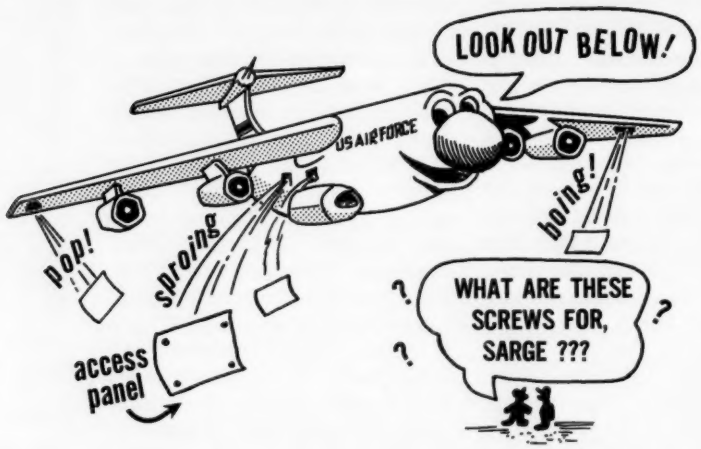
Above: Capt Phillip R. Budd receives bound volumes of The Flyer.

Below: His replacement, Capt Al Barbin.

Joining the Flyer staff as an associate editor is Capt Al Barbin. He comes to us from Altus AFB, where he was a C-5 FE/IP in the 56th MASq.

5-4-3-2-1 BLAST OFF

by Capt David C. Davis
MAC/LGMWA



The sky is falling! The sky is falling! cried the legendary Chicken Little as he scurried through the barnyard urging his friends to shelter.

His lament appeared in The MAC Flyer almost two years ago as the title of an article dealing with — if you haven't guessed already — dropped objects.

With pieces of aircraft still falling to earth with astonishing frequency, many MAC troops, commanders, maintenance men, and aircrew members are searching for ways to prevent this mortal-induced phenomenon. As a crewmember or maintenance man you should be aware of your part in this preventative battle.

Two basic factors cause dropped objects. The first, and one which you certainly can help prevent, is that people are not performing their jobs as well as they should on the ground. Panels, doors, and hatches simply aren't being installed properly; inspections are too superficial and aircrews are not writing up what seems to them minor discrepancies.

To help you detect conditions which could cause objects to drop from your aircraft, we have come up with three cardinal rules. So if you want to keep parts of your airplane from falling into the middle of someone's garden party, take a look at the following:

Rule 1: All the way off (open) or all the way on (closed). Don't leave something halfway secured or halfway detached.

Rule 2: Repair worn fasteners before they fail and never install any object with a defective fastener.

Rule 3: If personnel error mishaps are occurring, check your procedures and training. Do something about it.

These cardinal rules are sensible and understandable. Their implied goal is zero dropped objects. Nothing less is good enough.

If that last sentence torques your jaws, consider this: a tremendous effort is being made at all levels to achieve precisely that goal within a realistic framework. MAC has established a sensible program aimed at stopping dropped objects.

Command Emphasis

The three cardinal rules are inadequate if not followed aggressively by everybody. Ultimately, of course, it's the man closing the door or installing the panel who must bear the prime responsibility for security. But if supervisors, crewmembers, and commanders all the way up the line are not concerned, the man on the job probably won't be either.

Perhaps we can borrow a lesson from the old Army adage: "If it moves, salute it; if it doesn't paint it." In this case, "Whether it moves or not, inspect it." And crewmembers — write it up if it doesn't look good.

Inspection prior to flight is no small matter. All levels of management are looking at each dropped object incident in at attempt to spot trends. In

addition, any applicable checklist used prior to the loss is examined to determine whether items are being adequately inspected or inspected at the wrong time in the launch cycle. Changes have been made to checklists, not simply to add more inspections, but to make them more worthwhile in the real world in which we fly. It does little good to inspect a servicing access door prior to servicing if it's not checked after servicing.

These efforts toward cleaning up our checklists have reaped some benefits, and this close scrutiny will continue. As a result, the inspections will be what they're intended to be: a useful tool.

Basic Faults

Sometimes, all the inspections conceivable aren't enough . . . poor design is poor design whether you look at it or not. This brings us to the second basic cause of dropped objects — engineering deficiency.

Several years ago, a major automobile manufacturer developed a safety device whereby all the doors locked automatically when the car reached 10 mph. One of the company's executives had his new car equipped with this terrific safety feature and took it to an automatic car wash. Unfortunately, this particular car wash was the kind in which the transmission is left in neutral with the car's motor running. A chain then pulls the car through the wash. The tires were spun against brushes to clean the sparkling whitewalls, the wheels attained a speed of about 15 mph and — you guessed it — the doors locked. The executive outside watching the procedure was locked out of his car. The real world just wasn't ready for this terrific safety feature.

The same types of things happen in aircraft design. Any weapon system design must take into consideration the user and his characteristics. His limitations and ways of doing things are just as important as hardware strength and corrosion resistance. Man, the user, is a superbly adaptable creature, but in some ways he has not changed for centuries. Man is different from the machine and does not become obsolete after ten years. Likewise, he is slow to change in many respects. If the equipment he uses is outside his natural limitations, you just can't expect him to use it properly.

While some of our more exotic equipment, such as cockpit designs, use human engineering concepts, many times routine equipment does not . . . and it shows. Consider, for example, the C-141 latrine servicing access door. The door itself is a little larger than a square foot, located on a curved portion of the fuselage and hinged on the bottom. Several modifications have been made to this door so that now it requires operation of six latches to open or close it. Of these, two require a screwdriver and four require a button to be pushed with a finger — without a glove (because they're so small). Still, if for some reason the door does come open in flight, it is ripped from the aircraft because it is hinged in a manner that allows the air flow to tear it off rather than hold it closed.

Now, consider the man who uses the door. He is not an aircraft mechanic, and any knowledge he may have about aerodynamics is through association rather than formal training. His only need for a screwdriver is to open this one door. If it's —25°F and the wind is blowing about 30 knots, the temptation is very strong to open all the latches with the sharp end of a screwdriver being held in a warmly gloved hand. As expected, this beats up the latches and soon they won't work properly. But is it really this man's fault?

A modification to provide leading edge hinges and latches that can be opened with a gloved hand is being finalized by AFLC, but this takes time. The point is, efforts are being made to modify such items so that it will be hard for our people in the real world to goof.

You Can Help

In this endeavor to identify and correct design deficiencies and procedural inadequacies, we need **your** help. We, therefore, propose a fourth cardinal rule.

Rule 4: If you detect an inadequate procedure or inspection, or if in your work you find a procedural or design concept that needs change, suggest it formally.

Don't think a technical order merely contains an administrative error and attempt a better method on your own. There are many routes to change technical orders: AFTO Form 22 (Technical Order System Improvement Report), the suggestion program, modification proposals, and service tests requests. Use them and let's reach that zero dropped objects goal. If you don't think your suggestion will be heard, you're wrong. COMAC and staff will listen to anyone who has an idea on how to prevent dropped objects.

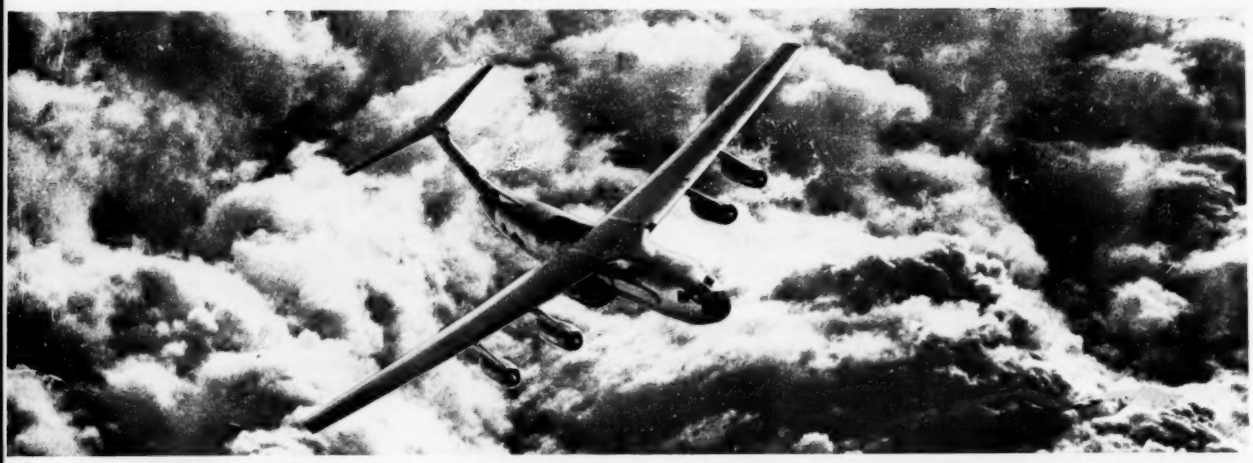
Remember, a strong will to do the job right, sharp eyes during inspections, and aggressive action to get poor design and procedures changed will go a long way in combating the dropped object problem.

The sky doesn't have to keep falling.

Everyone knows this is the season for thunderstorms, and we've all heard what they can do. But for a firsthand experience of one Starlifter pilot, read...

I'm A Believer

by Maj Charles L. Pocock,
MAC/IGYF



The wheels folded into the belly of the giant C-141 as we started turning to 090 degrees, heading out over the long white beaches and away from DaNang. As the blue-green South China Sea fell away, DaNang once again seemed far away.

The 30,000 pounds of filthy and broken retrograde cargo in this giant silver bird seemed strangely out of place.

* * *

An hour later, we received clearance to climb from flight level 270 to 370. As the pulsating engines started to grasp for altitude again, we entered solid cirrus clouds at FL 290. At level off, the cirrus was so dense that the radar was giving returns from only about six miles ahead. The navigator assured me that the radar was functioning, but dense ice crystals were preventing returns.

The VHF radio was now totally unusable and the HF radio was little better. Other aircraft, on UHF, company frequency, advised that the cirrus extended from below 20,000 feet to above 41,000 feet. As we pressed on, I knew that the typhoon moving north from the Philippines was going to cause problems until we were well north of Okinawa.

Kilo Whiskey (KW) beacon was the next fix. World 397 had just advised Taipei Control that he would be deviating 30 miles south of track for thunderstorm avoidance, but I didn't have any idea where he was. I hoped our radar would give us some warning if the storm was on our track.

Ten minutes south of KW, we encountered moderate turbulence. I turned on the continuous ignition, retarded the throttles three hundred pounds fuel flow per engine, disconnected altitude hold on the autopilot, and asked the nav what he saw on radar.

"Nothing," was his reply.

Immediately the airplane was in a 60-degree bank. The attitude indicator showed 30 degrees nose up pitch. The vertical velocity indicator and altimeter were climbing and the airspeed was falling rapidly. I disconnected the autopilot, pushed forward on the yoke, and when the dot on the attitude indicator was approaching the horizon line, rolled the aircraft level. The throttles were at takeoff rated thrust and even though I had 10 degrees nose down pitch, the vertical velocity was

still indicating an 8,000 foot-per-minute rate of climb with 200 knots airspeed.

Milky rime ice was building up rapidly on the airplane, and the hail sounded like skeletons on a tin roof. Lightning and Saint Elmo's fire made the whole airplane sparkle and everyone's hair was standing on end.

The turbulence was so bad, I thought the instrument panel was going to shake off. I locked the shoulder harness and pulled the straps tight. That helped a lot. Holding the airplane with my left hand, I started swatting at anti-ice switches with the right, hoping I could get enough on before we fell out of the sky.

As the altimeter went through 43,000 feet, I realized we had been in the storm for about 20 seconds and the way out was behind us. I started a left 15-degree bank. As this 125-ton monster grudgingly responded, the noise from the hail was deafening.

The navigator called out, "Slow the airplane down before we peel the radome off."

And the engineer announced, "You're overboosting the engines and we are almost at stall speed."

I knew that more than 15 degrees of bank would probably stall the airplane. But I didn't want to use more than 10 degrees nose down pitch because we would probably be in the down cell momentarily. The windshields now had iced over except for about nine-inch squares in the center of each.

As we passed 48,000 feet, we started to descend more suddenly than we had started to climb. Everyone was hanging by his seat belt. Briefcases, tech orders, oxygen masks, pencils and anything else that wasn't tied down was on the ceiling and floating through the cockpit. I knew we had changed cells from the updraft to the downdraft and immediately pulled back on the yoke.

As we went from 10 degrees nose down pitch to 15 degrees nose up, the overspeed warning sounded. I had the throttles retarded and the spoilers deployed to the flight position, but we still had 8,000 feet per minute rate of descent with 15 degrees nose up pitch! We were now on a reciprocal heading from which we entered this storm. I rolled the wings level and hoped we would soon be out.

The navigator said, "Why are we in a 45-degree bank?"

Again I felt the adrenaline surge and replied, "We're not."

"Look at the copilot's attitude indicator and HSI," he said.

As I glanced across the cockpit, the realization that one set of instruments had failed almost made me sick.

I made up my mind to follow my instruments come what may. I checked my BDHI and saw that it was indicating a turn from west to north (if that were true, we were going right back in the storm). But I thought the copilot's attitude indicator said left bank. Quickly I glanced across the cockpit. Left bank and right turn — his instruments have failed and mine are okay. I felt better now and went back to other immediate problems.

Still high airspeed, but slowing, still 4,000 feet per minute with nose high attitude, but not nearly so rough. Heading pretty close to south — we should be out soon. We better be — now 22,000 feet. Then as rapidly as it began, it stopped. We were in smooth air once again, now at 19,000 feet and below the cirrus.

As the ice started to sublimate and peel off, I slowed to about 220 knots and began a slow VFR orbit. We began to make a damage assessment. Luckily, the cargo had been well secured. The copilot had been in the lower bunk. He had his seat belt fastened and remained there throughout the encounter with the thunderstorm. That was a good thing; he might have been injured.

The navigator checked the tail surfaces with his sextant and they appeared to be undamaged. We found no damage to the leading edge of the wings or to the engine nacelles and the radar seemed to be working normally now, so I knew the radome was intact. The copilot's attitude indicator was still locked in a 45-degree bank, but seemed to be slowly correcting. The Nr 2 C-12 compass had failed, but by placing the mag/DG switch to DG and slaving it to the correct heading, we were able to reengage the autopilot.

I requested and received clearance from present position, somewhat south of KW, to Kadena at FL 190. As we started northeast toward Kadena, we could see the bottom half of this fearsome adversary. It was about 70 miles in diameter. This time we passed well clear.

As we approached Kadena, they reported thunderstorms with heavy rain, so I elected to proceed straight on to Yokota, our original destination. Although the crew was obviously shaken, that big, beautiful airplane had come through unscathed. The flight recorder indicated that design limit loads had been exceeded twice but examination proved that no elastic limits had been exceeded. At least nothing broke!

I have always respected thunderstorms and given them a wide path, but after this experience, whenever the weatherman mentions thunderstorms, he has my attention — right now!

TMF Emergency

Although I am not one to criticize articles published by authorities on a particular subject, I could not help but put in my two cents worth on your article, "A Tale of Two Training Flights," found in your March issue.

The way I read the article, the first example is the standard of professionalism expected of instructor pilots and flight examiners and the second example is the opposite. Personally, I believe that the first instructor pilot committed a gross error in flying safety by continuing with the local flight, which consisted of numerous landings, after experiencing difficulties with the landing gear. It is my firm belief that he should have proceeded back to his home station and executed a full stop landing and asked maintenance for a check of the landing gear system. Any time an emergency procedure is accomplished in an aircraft, it should be rather basic logic to have the system concerned restored to normal prior to any further flight. Although the article doesn't say, I assume that a circuit breaker had tripped in flight since such a thorough instructor pilot as this one would not have missed it on the before starting checklists.

Anyway, although I am not in MAC now, I do enjoy your magazine. My total flying time is approximately 9,800 hours which, with the exception of some T-39 and Convair time, is all in the C-118 and C-54. I have been a flight examiner in the latter two aircraft almost eight years.

Lt Col Ronald E. Watson
Hq US Southern Command
Quarry Heights, Canal Zone

★ *Since the mission was a training flight, the emergencies described in the feature were all simulated ones. Not one of our proofreaders felt that we implied an actual emergency. However, on rereading the feature with your viewpoint in mind, we discovered that the simulated status of this emergency was never stated. Had it been an actual emergency, your suggested course of action would have been right. Thanks for the sharp eyes — keep reading TMF.*

Vitamin Tips

In the January issue af The MAC Flyer there were two articles on self-medication (alcohol), also a short note on stop smoking.

You may think I fall in the same position as these others, but I challenge you to try these techniques to overcome hangovers.

The use of food is important but no sweets of any kind. High protein and take lots of (B) Vitamin (B) complex, also magnesium. Reasons: the body is depleted of nutrients when drinking alcohol. Same effect if you consume too much sugar. Coffee and sugar can give you a cheap drunk (low blood sugar). So vitamin B and magnesium are washed from system and they must be replaced. Of course, other vitamins and minerals are also lost. But these will help the person to stabilize faster.

For the stomach, in place of anti-acids use calcium (bone meal) or plain magnesium (dolomite). This is better than anti-acids. These are very dangerous and cause digestive problems. These things I've mentioned do not cause digestive problems.

For ulcers you said too much acid in stomach. I find usually it is:

1. A deficiency of vitamin A — no mucous membrane output to protect stomach lining.
2. Add HCL tablets to your diet will help.
3. Calcium and magnesium.

If you doubt my thoughts, I suggest you read "A New Breed of Dr.," and "New Hope for Incurable Diseases" by Dr. Cheraskin and Ringsdorf published by ARCO (1971 edition).

This is just a start. Let's do it right and we won't have to do it over. Don't drink, don't smoke, eat a balanced diet and supplement. It is a must.

If your medical advisors do not agree, I would like to talk to them. It is not that I'm smarter but I have information they might like to see. Also, they might like to look at me. I've got a story to tell that might be hard to believe but true, and I've got some people for them to meet. Of course, if they are not interested in improving the service man's health, I don't expect to hear from them. But when I get a chance, I unload on our service people.

I'm for a healthier nation, and it can only be done by a change in our dietary habits. We must have more raw food in our diet — also, raised on better soil. Our land is sterile.

(name withheld)

★ *Although not endorsed by MAC Safety or TMF, we've heard that C. R. Terror may give this remedy a try. Any of our medical advisors want to comment?*

Fashioned Terror

Old poops should be allowed a rare moment of nostalgia. Especially old retired pilot poops.

It was my good fortune to stumble across a recent issue of The MAC Flyer while visiting a nearby Air Force base. It was suitably located in a small room equipped with flushing furniture, firmly attached by chain to an appurtenance thereof. As I addressed myself to the problem at hand and began poring through the contents of this bright, with-it periodical, old memories began flooding my mind.

It was in 1954 that I had been given the impossible task of putting together the first copy of The MATS Flyer, as it was then called. Trying to get authorization for a magazine through a parsimonious Congress in those days was tantamount to trying to move Mount Rushmore with a forklift. But bull it through we did, and the first heady issues went to press extolling such things as the virtues of being safety conscious about C-97 propellers and how to distinguish from the smoke what kind of fire you had in your C-54 engine.

The magazine was well received, but it was unanimously agreed it needed a touch of humor to leaven the gray pages. It was then, in the vapors of a two-fer night at the club, that I gave birth to the idea of C. R. Terror. Little did I dream that our old martini-swilling airways acrobat, Paunchous Pilot, would become a household word among the flying fraternity for the next two decades.

Years later I traded the throttle quadrant of a B-50 for the keyboard of a Smith-Corona. Although easy to doff the suit of blue, I found it impossible to get flying out of one's system, especially the camaraderie of the Air Force throttle-jerkers. Perhaps for this reason, I found the tenth hardcover to blossom from my literary vineyards was a book about an old and dear love — The Air Weather Service.

Written as a novel, HURRICANE HUNTERS has just been released. It has been bought by Metromedia Productions, is being prepped by producer Eddie Montaigne as a feature motion picture with a top-drawer cast.

At any rate, congrats on raising the old wipe to new standards. It's a mighty fine looking rag.

William C. Anderson

★ *Thanks for the kudos. Your brainchild is alive and well. (By the way, readers, we have something in the mill from C. R. Terror's creator.)*

Glottological Bloke

We read in April '73 issue of The MAC Flyer, the article — "What Communications Gap?" by Capt M. Davis.

As a matter of fact, we passed it to a few of the bods in the Mess. Two of the chaps, just in from a 48, said that it sounded like a lot of cods to them, the other jokers said that you were pulling our leg, but it wasn't really all that hard to get the gen but some of the griff was quite a dag. Our CMC, who had just come in after doing a foreigner on a bloke's u/s mill, stated that he would have a bash at interpreting the article if we promised to shout him a few 7's; in fact, after re-reading it he changed his mind, said that it had to be 10's.

Anyway after quite a flaming chin wag we decided to drop you a line because it is obvious that you Americans cannot speak plain English. Actually though we think the "The MAC Flyer" is the real "Bees Knees" especially C. R. Terror, so keep up the good work, and don't forget if you chaps in MAC ever get over to New Zealand do come and pay us a visit — we are SURE that you will be able to understand the lingo.

Sgt (E7) T. Palmer
Royal New Zealand Air Force

★ *As proof of the success of our sustained efforts to eschew obfuscation (or jargon), we welcome your lucid response.*

Right on, mates.

What the Caption Meant

Referencing your article, "Axial Eructation," in the May 1973 issue of The MAC Flyer, the essence of the print is well taken; however, exception must be made with the picture on page 23.

The caption, "Improved maintenance procedures will help prevent compressor stalls," is quite incongruous with what is portrayed. Improved maintenance procedures are engendered through an awareness of potential safety hazards, use of technical data, and discipline. The use of maintenance stands without rails, coupled with the parka on the steps, creates a potential falling hazard. Personnel standing on the rails of maintenance stands is a safety hazard, and the illustration of the stand being placed in motion (upward or downward) increases the odds that the individuals on the stand may get a down to earth look at each other.

The aforementioned items indicate sloppy maintenance practices and I trust are not condoned by your magazine. Improved maintenance procedures can only succeed when they are implemented through the use of quality maintenance practices.

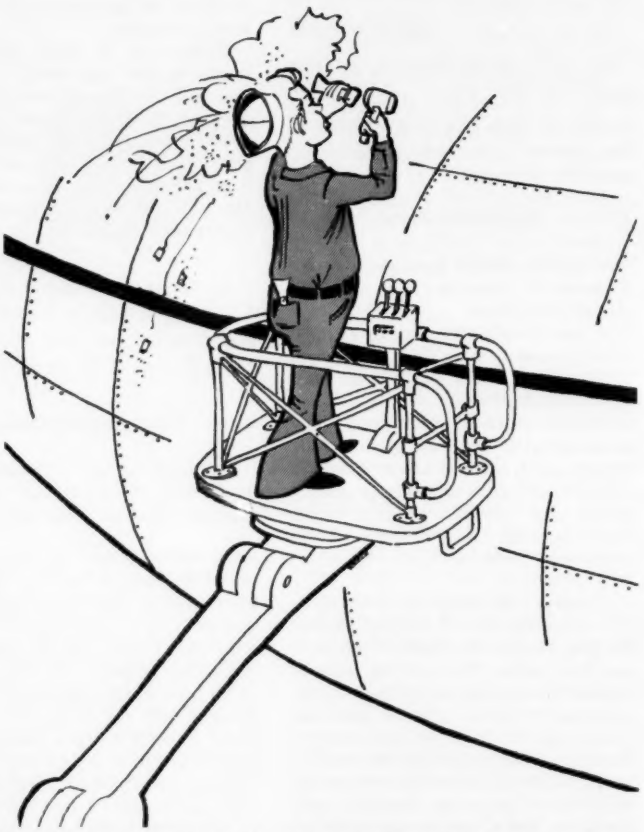
Col James F. McKague
Chief of Maintenance
63 Mil Alft Wg

★ *The discrepancies you cited in the photo on page 23 have aroused the concern of many maintenance people. In fact, the response was so rapid and so positive that we cited the errors in our "After Deadline" feature in June.*

Although our publication of this photo might present counter arguments, we obviously cannot condone poor maintenance practices. Unfortunately, we occasionally get mousetrapped by our photo file. Our consumption of photos is quite high and our supply is rather limited, so we often grab an apparently suitable photo which proves to be a loser. In this light, we solicit from all readers action photos of maintenance men working on current equipment.

Corrosion to an aircraft is like a malignancy to the human body. Both can strike anywhere and cause considerable damage. But if detected early, neither has to be...

The Scourge of the Fleet



by Capt Lowell A. Converse
MAC/LGMWA

Remember those old movies where swearing sailors chipped, scraped, and slapped battleship gray paint on their cruisers, and almost as soon as they finished, began the process all over again?

They might not have enjoyed it, but these sweating gobs knew that it was either control corrosion or allow it to eat them right down into the deep six.

Unlike seamen aboard Uncle Sam's giant ships, you aircrew members aren't faced with the unpleasant job of scraping corrosion off your machine while it's in motion.

But your bird is, nevertheless, vulnerable to similar corrosion problems throughout its life span; therefore, it is important for crewmembers as well as maintenance types to be aware of some of the corrosion problems showing up in our newest aircraft and what is being done to solve them.

Although corrosion which vents its fury on seafaring ships is not exactly the same breed as that which eats away at Uncle Sam's air fleet, the message transmitted by both is loud and clear: Prevent it or lose your fleet.

With the C-5 becoming a vital element in the MAC airlift mission, corrosion control has become more important than ever. For, like the new aircraft before it, the Galaxy has its share of unique problems.

Many of you remember flying the C-141 in an unpressurized flight condition for a special drop-in repair at Robins AFB, GA., about a year ago. The reason for this was severe corrosion of the longerons along both sides of the fuselage at the crew entry door. Moisture collecting under the door tread during flight line showers was the cause. Rain

soaked flight crews and ground personnel contributed by tracking in and out. But this can't be helped when there is a mission that must go. Once corrosion started, fatigue complicated the process and cracks began to appear. Timely inspection — and timely is a key word in corrosion control — identified aircraft which needed immediate repairs in this area. And once the corrosion had been identified, some 178 aircraft were repaired at the special drop-in program. It took just 30 days.

That was only one of the Starlifter corrosion problems. Another involved stress corrosion on the nose landing gear oleo trunion, the solution was to switch the type of aluminum being used. The B-57 experienced corrosion problems in the wings. This required switching metal in some cases and installing splices in others. And, so, the corrosion problem goes on and on.

With the C-5 now on the line, corrosion is becoming an increasingly serious matter. Let's take a look at some of the problem areas on the Galaxy and some of the solutions and future plans.

Problems

The failure of a main landing gear yoke last year resulted in expenditure of time, effort, and money to recover the aircraft, inspect the fleet, and implement reheat treatment of the yokes at SAAMA. This failure was caused by corrosion and it was not the only one.

Pitting corrosion of the aft engine mount (the result of nickel cadmium plating deterioration) required reworking the fittings during a pylon replacement program. Here again, the problem was discovered before it became extremely hazardous, but such rework is expensive.

Aircraft availability and a great number of manhours were lost last year during inspections for cracks in the torque box attach fittings. These inspections were in addition to a normal recurring inspection and a replacement program. Stress corrosion of an extensively machined forging had caused the cracks.

Another problem which has been detected during depot maintenance is stress corrosion cracking in the keel beam. To date, six cracks have been found; fortunately, all have been reparable by the addition of doublers.

More recent is the exfoliation corrosion problem on the wing splice plates and the lower fuselage surface at the keel beam. Troubles in these areas are now being detected before they become too widespread. However, replacement of the splice plates, should the necessity arise, would be most difficult.

These are but some of the major corrosion problems that have surfaced. Corrosion is definitely time dependent and, as such, is not likely to moderate without stern measures.

Patterns

Figure 1 shows an interesting comparison. On the left are some of the current minor corrosion difficulties associated with the C-5. On the right is a list of some of the corrosion problems experienced by C-141s and C-130s. The consistency of corrosion problems is obvious, and the C-5 is following the pattern. This is a pattern which, considering the basic susceptibility of the C-5 to corrosion, becomes very serious. While considerable

C-5	C-130	C-141
wing plank corrosion on fatigue test articles	wing plank corrosion	wing plank corrosion
wing access door flanges	wing access door flanges	wing access door flanges
lower skin inside wing dry bays	wing riser cracks	wing riser cracks
wing splice plates	center/outer wing joint	wing splice plates
chines	wing attach bolts	wing attach bolts
cargo tie down rings	chines	chines
landing gear	cargo tie-down fittings	cargo tie-down fittings
	fuselage structure under paratroop door	fuselage structure under crew entry door
	landing gear	MLG bogie beam and lugs

Figure 1. Corrosion comparison table

emphasis was placed on corrosion avoidance during design of the C-5, its very nature makes it highly susceptible to corrosion. It is just possible that the ultimate service life of the C-5 may be more dependent upon corrosion than on fatigue. There are three reasons for this:

High stress levels emphasized a weight reduction during design. Corrosion causes loss of material strength. There are few aircraft that can afford this loss, including the C-5.

Weight reduction efforts required the use of much high-strength, light-weight (but corrosion-susceptible) aluminum alloy.

The sheer size of the aircraft is also a factor. The material characteristics of massive forgings and unusually large machined components are not as well known as those of smaller fittings.

So far there is no long-term program to predict where corrosion will appear next, although normal inspections should uncover most problems. More keel beam cracks from stress corrosion and corrosion of gear components due to mechanical damage are anticipated. Corrosion of wing surfaces is predictable, particularly on those aircraft which will see extended service before repaint.

Control

Corrosion control exists to prevent corrosion before it requires major maintenance. For this to be done, three things must happen:

First, corrosion prevention and control at all levels must be given the priority it demands.

Second, a comprehensive program for projecting and dealing with potential problem areas must be implemented.

Third, you — aircrews and maintenance men — must become involved. We'll look at these control methods in this order.

High Level Priority

More emphasis is needed on base level corrosion prevention and control. Normal priorities of maintenance sometimes place corrosion control near the bottom of the list, primarily because corrosion is not an immediate problem affecting aircraft availability.

Current guidance gives MAC's maintenance chiefs wide latitude in establishing corrosion programs to suit local conditions. This has not always proved effective because not all wings give corrosion control enough priority. One solution, and this is in planning, is to define in detail specific scheduling requirements for corrosion prevention for wash frequencies. But difficulty arises here because of the nonavailability of aircraft away on missions.

While interior corrosion treatment can be performed outdoors, the controlled environment needed for painting, a major portion of corrosion prevention, requires hangaring the aircraft and excluding any other type of simultaneous maintenance. Therefore, to have a complete corrosion prevention program, additional in-hangar maintenance time is necessary.

MAC has taken two steps which will bolster the scheduling:

NORS aircraft are now available for corrosion treatment.

Isochronal inspection time for the C-5 has been extended by one day. Other maintenance may be performed simultaneously on a noninterference basis. Without this type of scheduling, corrosion control personnel do not have enough available on-aircraft time to complete the job.

Projecting Problem Areas

The C-5 System Program Office directed a reemphasis on corrosion in October 1972 to take advantage of the corrosion control lessons we have learned from our older aircraft. Since that time a more aggressive program has been developed by the contractor to identify and provide positive corrective action for corrosion susceptible areas.

The service life of an aircraft is determined during its design but is based primarily on the fatigue life of the aircraft. The assumption here is that corrosion is an identifiable occurrence, treatable before it becomes a problem.

This assumption is valid only where accurate prediction techniques have already been developed. Such a prediction technique is necessary for the C-5 and requires concentrated efforts by Aeronautical Systems Division, Systems Command laboratories, and weapons system contractors.

The reason for implementing such an effort is simple: current fatigue life prediction programs may not be valid if corrosion is not considered an integral part of the prediction process.

You

The most important element in closing the loop—containing or controlling corrosion — is you. No matter whether you're a wing commander, maintenance chief, crewmember, or the fellow who does the work on the air machine — if you don't plan, supervise, inspect, report, clean up — do your job—corrosion will literally eat us alive.

Galaxy Sidestep

mini poster

This bird can move sideways when it turns -- keep the wing tips and tail clear.

August 1973

You and Your Coffee Pot

Dear Doc

I just can't seem to get started without a couple of cups of good strong coffee. Now, some nut tells me that coffee's not all it's cracked up to be.

Please comment.

Java Lover

Dear Java

In all of the places that I have been in the Air Force, one of the things that is common everywhere is the coffee pot. They're found on the flight line, in snack bars, and in offices by the hundreds. Coffee is a very popular beverage.

In addition to being the ignition key that gets us started in the morning, coffee is a social event, an unconscious habit, and to some a liquid source of oral gratification. Unfortunately, coffee is not an entirely harmless substance. The average cup of Air Force coffee contains between 100-150 milligrams of caffeine. As a comparison, an APC tablet used because of its pain relief-stimulant effects contains only about 32 milligrams of caffeine, a mere 20-30 percent of the dose to be found in one cup of coffee. Caffeine is a fairly potent drug, producing stimulation of the brain, stimulation of the heart and blood vessels, and irritation of the stomach with increased production of digestive juices and acid. Coffee also causes increased blood pressure and stimulates abnormalities in heart rhythm. Used to excess, any stimulant can be dangerous, both for the euphoric effect as well as the "let down" period of withdrawal.

It is these facts which cause some crewmembers considerable concern, when, during routine flying physical exams, they are found to have elevated blood pressure or abnormal electrocardiograms. Many become aware of the side effects of coffee for the first time when their continued flying status is jeopardized. A word to the wise: Do not drink coffee prior to coming in for your routine flying physical.

Coffee in moderation is okay; however, you gents who consume 5, 8, or 10 cups of coffee per day are stressing your systems and may one day wish you hadn't.

Take Care

Doc

— 4500 ABWg

The Master Manipulator finds that planning an approach requires much more than a back rub at altitude.

C.R. TERROR

"Dum de dum," hummed the Lothario of the Airlift Game as the shapely flight nurse finished rubbing his neck and disappeared from the flight deck.

"Ah, the comforts of air evac flying," mused the Fat One. Then he turned to Sam and said, "You know, you should try and swing a tour at Scott flying C-9s — I'll miss you Sammy m'boy — but the back rub on every mission will certainly be nice." As C. R. finished his comments, a voice came up on interphone.

"Sir, this is Capt Darby, your ACM. Did you say you're going to C-9s at Scott? I'm stationed there, you know, as Associate Editor of The MAC Flyer." The Great One turned in his seat and his ears perked up.

"You don't say — not a bad rag you guys put out. I read it occasionally. I think it's mainly written for the FNGs, though. Us old heads know most everything."

A discussion ensued about the Scott local area, St. Louis, the 375th, and flight nurses. Only occasionally was Capt Darby able to interject something about the magazine, but he did find out that C. R. was on his last C-141 flight. The Master Manipulator would be packing his bags for his PCS to C-9s when he returned to Dover town.

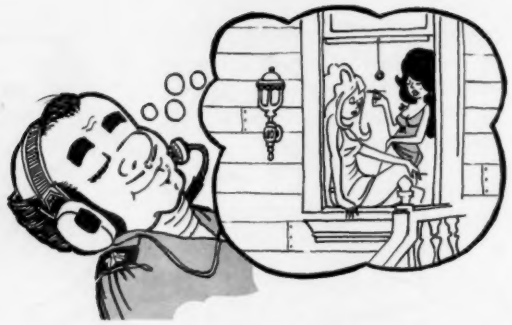
The conversation was interrupted by the Kansas City Center controller: "Air evac 002, what kind of approach do you want into Scott and do you have any special requests?"

Sam looked to his leader for guidance but, instead, received a blank stare. The Master Manipulator's mind was actively engaged in many thoughts, none of which included airplane flying, so Sam pressed the mike button and responded.

"No sir, Kansas City, we have no special requests. We'd like an en route descent with a precision to runway 31. Also, how much thunderstorm activity is there in the St. Louis-Scott area?"

The controller replied, "I'm painting several build-ups on my scope but I should be able to get you around all of them — let me know when you want to start down."

Sam switched number two tacan to channel 59 and the DME stopped spinning on 156. He quickly figured that 110 out



would be a good starting down point and then got the Chief's attention.

"Hey, boss, if you want to join our airline and start a descent checklist, I'll make a few radio calls and we can point the nose of this kerosene converter toward the ground."

"Okay, troops, listen up," spoke the Thruster of Throttles as he whipped out his checklist and began rambling on about the descent." "We'll make a standard glide to a final approach to 31 — any questions?" Not waiting for a reply, he continued, "Sam, call the Patient Airlift Center and Scott Base Ops. See if they have any questions about our load and find out the latest weather. Blinky, give me a hundred mile range. And Max, give me the landing data." Then the Ace of Aerospace pulled off a hand full of throttles and nudged the nose over. Sam finished on the radios and as he began to brief C. R. on the weather, Kansas City Center cleared them to descend to FL 240. Sam quickly called out of 370 and shook his head.

"I thought we were cleared at pilot's discretion," puffed the Jaunty Jabber. "No harm done," he continued, "he'll just think we set up a fast rate of descent — call level 240 m'lad," and C. R. tugged on the yoke, leveling at 240. This was quickly followed by a call from the medical director in the cabin, kindly asking that the yokel at the controls cut out the tactical fighter maneuvers and consider the patients and medical crew in the back. C. R. turned toward the cabin, put his hand to his mouth, and blew vigorously, then made a silent rude gesture and bugged Sam to get a lower altitude.

* * *

"Air evac 002, turn left to 050. Cleared for an ILS to runway 31, circle to land runway 13," boomed the Scott radar controller. C. R. was all arms as he man-handled the big bird around to the assigned heading and set his heading bug. The controller continued, "Reported weather now 1,500 overcast, light rainshowers, winds 110 degrees at six, gusting to 20, thunderstorms in the area."

The Rollicking Rogue of Rum and Runways mumbled, "I should have known better than to plan an approach. The weather prognosticators have prevaricated to me again. It just doesn't pay to try to get ahead. Blinky, quick, look up the circling minimums to runway 13. Crew, you heard the man — brief yourself on a circling approach to runway 13. I sure hope my new commander is out watching the flying activities 'cause I'm about to show these air evac weenies how a circling approach is done in Big MAC."

Blinky quickly grabbed the IFR supplement, found Scott, and observed, "Hey, chief, the book has a whole bunch of them. Which one do you want?"

"Gimme the one for 13, dummy, and hurry," blurted the Bald Baron.

"Roger, 13 is 1,120 feet and we're about there now," called Blinky.

The Gross Gripper of Go Levers pulled the yoke back a bit and leveled at 1,120, still very much in the soup.

"Hey," puffed C. R. "I thought this stuff was 1,500 overcast, but I sure can't see much straight ahead."

About this time Sad Sam caught sight of the ground below them. And then both pilots saw the runway and strobes.

"Hang on, troops!" shouted C. R. "We're now V, F, and R." A crank and several banks later, The Rotund One established himself on a downwind to 13, slightly below 1,120 feet, to stay clear of the clouds.

"Pilot, this is your navigator — you're below minimums," challenged Blinky.

C. R. didn't answer as he glanced at his altimeter and the

runway. Beads of sweat popped out on his brow. He had gotten himself in a little too close to the runway; he was low, and he knew there were trees on final to 13. Beginning the turn to base, he saw he would overshoot final — and increased the bank to 40 degrees, simultaneously giving the left rudder pedal a nudge and pulling back on the yoke to maintain altitude.

"Thump!" The Starlifter jerked a little and the bank increased to 60 degrees. Blinky yelled, "Whee!", oblivious to the fact that they were less than 200 feet above the ground, but Sam turned green as he realized that the wing tip had just nicked the top of the trees.

C. R. whipped in right aileron and righted the flying hospital just as the plane crossed the threshold. Unfortunately, a gust caught the left wing, rolling the right wing down. The wing tip struck the rain soaked runway, showering it with sparks.

* * *

The observant tower operator activated the crash net and the rest of the crash equipment joined the already prepositioned fire equipment. C. R. slowed the sleek gray and white transport and turned off the runway.

"You really ripped it boss," Sam began. "What happened? Everything was going so well." C. R. said nothing — he was visibly shaken.

Then C. R. broke the silence. "Don't anyone answer any questions — I'll do all the talking." He regained some of his composure and left Sam with the engine shut-down duties. Rolling down the sleeves of his flight suit, he headed for the crew entrance door to face the firing squad now forming outside.

"Major Terror," began a gray-haired gentleman with a star on his collar, "what the hell happened here?" C. R. cleared his throat and began to speak, "Well, sir, I . . . umm . . . ah . . . I must have been hit by a severe gust just as I touched down and it . . . um . . . I . . . got a wing tip."

"I can see that, Major Terror, but where did the tree limbs stuck in the left wingtip come from?" By this time most of the crew had deplaned, including the ACM, Capt Darby. The general quickly spotted him and asked, "Cal, were you in the cockpit during this flight?"

"Yes, sir, I was," he answered.

The general continued, "Can you tell me what happened?"

C. R. turned pale as the young captain began relating the approach. C. R. heard Capt Darby say something about not selecting the right circling minimums and improper crew coordination. The general interrupted the captain long enough to tell C. R. that he was relieved of flying duties until a full investigation had been completed. He was to report to the flight surgeon with his crew for physical examinations. As C. R. boarded the hash wagon for the trip to the flight surgeon, he commented to Sam, "Looks like we might be here for a few days.

"Now, I know this flight nurse . . . "

Whether it's a flight physical, X-ray, or aircraft inspection, each is...

Just Another Way of Looking

by SMSgt Eugene Gulley
MAC/LGMWB

When the flight surgeon gives you your annual physical, he does an absolute minimum of cutting or jabbing on your tender body. He doesn't perform surgery or take you apart piece by piece to check you over.

Instead, he looks, listens, and tests by using an impressive array of devices such as X-ray, stethoscope, and electrocardiograph to clue himself in on your physical and structural condition.

Let's call this physical exam a nondestructive inspection (NDI).

The same principle holds true for an aircraft. Airplanes and their components undergo the same type of nondestructive examinations as do the crewmembers who fly them. And, like the flier, the aircraft must undergo these inspections at specified intervals.

The flight surgeon certainly won't open your chest for a lung examination when it can be accomplished just as effectively with an X-ray. Knife work would be far too risky and would put you out of commission for several weeks. Plus, the cost would be astronomical.

However, until a few years ago, this "tearing into" procedure was routinely employed during aircraft periodic inspections. This "destructive" principle meant virtually ripping into the guts of an aircraft and physically examining its parts for evidence of wear. During this lengthy process, many components were necessarily damaged and had to be replaced.

With larger and more complex airplanes, it became evident that "destructive" inspections were too costly and aircraft down time had risen to unacceptable levels. So nondestructive testing was developed.

Today, walk into an NDI shop and you'll find a group of specialists who, within their own environment, function in the same manner as medical technicians. These specialists use sophisticated equipment and six different methods of examination to check the health of the examinee. The detection techniques employed in NDI are: visual, radiology (X-ray), eddy current, ultrasonic, liquid penetrant, and magnetic particle.

Sound complicated? Perhaps. But don't let it scare you off. Briefly, here is what NDI entails.

Visual: This is the oldest and one of the most commonly used methods. In one form or other it is used with all other methods and employs the use of optical devices such as magnifying glasses, borescopes, etc., to aid the naked eye. It is only suitable for surfaces which can be viewed, and generally detects only larger defects.

Radiography: X-ray inspection is recommended if the suspected structural area is hidden or not easily accessible. X-ray has the ability to penetrate material opaque to visible light. The radiation is absorbed to varying degrees, depending upon the density and atomic structure of the material, and when backed by radiation-sensitive film a photo negative is produced. This test is used on both metallic and nonmetallic products for checking welds, forgings, castings, fabricated parts, etc.

Eddy current: This test can be used to inspect bolt holes, cylinders, tubing, flat sheet material, and coatings. It provides a means of measuring conductivity, detecting discontinuities, evaluating fire damage, and determining the thickness of plating on articles. Eddy current inspection is used to locate defects both on the surface and subsurface. The equipment consists essentially of a probe and an electronic instrument. The probe contains a coil, used for inducing the electric current into a part. The electronic instrument contains a bridge circuit which measures the variations in the electric current flow and records these changes on a meter.

Ultrasonic: This method of inspection uses high frequency sound waves as a means of detecting discontinuities in parts. Perhaps the oldest NDI method which employed this principle is the "coin tap" test. Here the operator's ear acts as a detector, and his brain filters and analyzes the signal. Although the "coin tap" technique is considered somewhat unreliable because the analysis depends on the operator's interpretation of what he hears, modern ultrasonic equipment is precise and accurate. Today, ultrasonic techniques are used to inspect laps, seams, and laminations, and detect inclusions, cracks, and defects in steel plates 1/4 inch to 12 inches in thickness. It can also be used to detect porosity, cupping, internal rupture, nonmetallic inclusions in bar stock, defects in welds, and to evaluate bond quality in brazed joints and honeycomb assemblies.

Liquid penetrants: These are used to detect small cracks or discontinuities which cannot be seen by the normal visual inspection method. When applied to the surface of a material, the highly penetrating liquid seeps into any discontinuity. Then, after the liquid is removed from the surface, cracks or deformities which have absorbed the dye become visible. Only surface and subsurface defects that have surface openings can be detected.

Magnetic particles: This last test can be used to locate cracks or flaws in the surface or subsurface of readily magnetizable materials. It provides excellent indications of all surface discontinuities if the part is free from foreign matter. This is how it works. Magnetic fields are induced in ferro-magnetic parts. By controlling the direction of the magnetizing current, the lines of the magnetic force can be induced at a right angle to the discontinuity. If the area being magnetized is covered with small magnetic particles, a flaw or discontinuity can be visually detected since the particles will aline themselves along the flaw.

Although you as a crewmember are not responsible for NDIs, you are concerned with your aircraft's health. And a better understanding of just what goes on in the maintenance complex makes for a more harmonious and efficient operation. It takes more than fuel and spark to keep your body going. The same is true for the bird you fly.

Syracuse Sucker Trap

by Thomas H. Block

I'm feeling feverish. The reason for my high temperature is apparent, yet I doubt even Marcus Welby could find instant relief for my symptoms. My problem is simply that a recent aeronautical episode made me ill with fury. If tales of bullish government insensitivity and official asininity make you steam like an overworked teapot, then I have a story for you.

The plot began as my hand eased back a set of power levers. We had been unremittingly IFR since takeoff, and the dictates of an unwinding DME called for descent to begin. As the turbines unspooled to near flight idle, I flipped on the seat-belt sign. The cabin-load of passengers bound for Syracuse, New York, began to buckle up. Our progress had been smooth through the heavy clouds that reached from near the surface right up to flight levels, but I anticipated some light chop during the descent. I tuned to the Hancock Field ATIS as soon as possible, since their tape is usually a talkative one, and leaned back in the seat to more comfortably absorb the recording.

I concentrated with both ears, for the weather would be sure to contain items of interest that only an everywhere-is-near-minimums day can provide.

"Bleeeeeeeeph. . ." The tone ricocheted around my skull, for I had been lucky enough to drop in on precisely the beginning. "This is Syracuse Hancock Field with Information Bravo," said a voice with overtones of cold coffee and midday slump. "... an ILS approach to Runway 28," it said, "circle to land on Runway 32." That perked me up, since the last sheet of teletype symbols I saw put the

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place right at straight-in limits. The apparent improvement was gratefully accepted, because the prospect of diverting was a complicated and unhappy task. "I'm sorry, madam, but this is our alternate airport. It was selected because it is located away from the widening trough of overrunning warm air and thus provides us with certain operational necessities. . ." was an unsatisfying way to earn a buck.

"The Syracuse weather," the words in my earphones continued, "is ceiling 400 feet overcast, visibility three miles. Wind is from 320 at 10 knots, altimeter 29.74."

"Hold on one minute," said my eyebrows as I sat upright. I reached for my Jeppesen to verify my suspicion. Yup, just as I thought: The MDA for circling at Syracuse is 700 agl, because of a large radio tower about half a mile southeast of the field.

"Say, boys," I said to approach control, "the ATIS says circle to 32, but the weather is below minimums for that."

"The official approach is currently an ILS to 28 with circling to 32," he droned back. "Are you requesting something else?"

"Well, yes," I replied, gathering my thoughts on an open mike. "We want an ILS straight in to 28. How can you promote a circling approach when the weather isn't even close to what we need?"

"Minimums for circling at Syracuse vary between one and two miles for different aircraft, and we are reporting three miles visibility at this time" was his pedantic reply. He knew perfectly well that there was no law against at least attempting an approach, even if the cloud base was resting atop the runway, so long as the visibility was at or above minimums.

"I know an approach is legal, but do you think it's smart trying to sucker guys in where the only alternatives are missing the approach or going way under limits?" I was working myself into a lather.

"We have the legal minimums for the circling approach, and 32 is the noise-preferential runway. Since the wind is 320 at 10 knots, Runway 32 becomes the official runway."

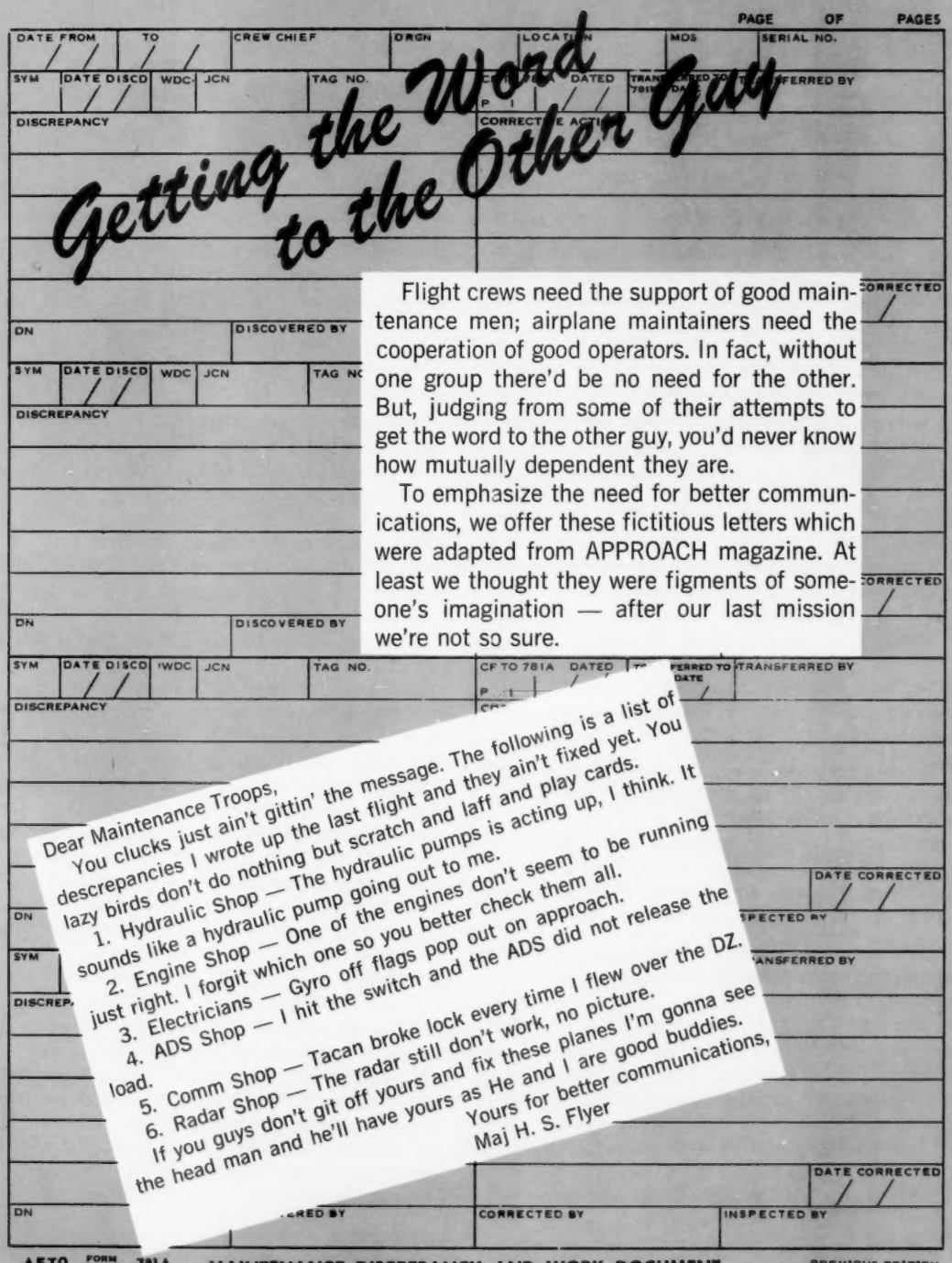
"How many people have successfully circled for 32?"

"No one has yet attempted it," came his hesitant reply, but his tone arched again to continue with: "It remains the official runway. If you want something else you must request it."

"Uhhh, Aztec 433, I'd like to land straight-in also," said a new voice on the frequency. It was the aircraft ahead of us, who had evidently not discovered the legal entrapment until he heard my heated questions. He hadn't cast a judicious enough eye toward the ATIS to see that it was legal but couldn't be done.

There are scores of civil servants who understand that the basic premise of any regulation lies in its spirit. The philosophy that we can, solely by legislation, have safe flying (or have anything solely by legislation, for that matter) contains a childish attempt to make complicated matters overly simple, and the price we pay for this is banishment to the purgatory of unreality. Airplanes, however, are very real things—along with measured overcasts, heavy rain and radio towers. Those men who know how to keep reality in touch with the printed word should be assembled in Yankee Stadium and given the standing ovation they so richly deserve.

To those in positions of responsibility who choose to solve all problems by strictly adhering to paragraphs of words that often lack even a loose contact with real life as it grinds along, I propose we give them a different type of acknowledgement. Place thumb gently against nose, raise the other four fingers, then spew forth a resounding "pfffffft." The Bronx cheer is, unfortunately, the only type of language they really seem to understand.



Getting the Word to the Other Guy

Flight crews need the support of good maintenance men; airplane maintainers need the cooperation of good operators. In fact, without one group there'd be no need for the other. But, judging from some of their attempts to get the word to the other guy, you'd never know how mutually dependent they are.

To emphasize the need for better communications, we offer these fictitious letters which were adapted from APPROACH magazine. At least we thought they were figments of someone's imagination — after our last mission we're not so sure.

Dear Maintenance Troops,

You clucks just ain't gittin' the message. The following is a list of descrepancies I wrote up the last flight and they ain't fixed yet. You lazy birds don't do nothing but scratch and laff and play cards.

1. Hydraulic Shop — The hydraulic pumps is acting up, I think. It sounds like a hydraulic pump going out to me.
2. Engine Shop — One of the engines don't seem to be running just right. I forgit which one so you better check them all.
3. Electricians — Gyro off flags pop out on approach.
4. ADS Shop — I hit the switch and the ADS did not release the load.
5. Comm Shop — Tacan broke lock every time I flew over the DZ.
6. Radar Shop — The radar still don't work, no picture.

If you guys don't git off yours and fix these planes I'm gonna see the head man and he'll have yours as He and I are good buddies.

Yours for better communications,

Maj H. S. Flyer

PAGE OF PAGES

DATE FROM / TO	CREW CHIEF	ORGN	LOCATION	MDS	SERIAL NO.

SYM	DATE DISCD	WDC	JCN	TAG NO.	CF TO 781A DATED	TRANSFERRED TO 781K DATE	TRANSFERRED BY
					P		

DISCREPANCY	CORRECTIVE ACTION
	DATE CORRECTED
DN DISCOVERED BY	INSPECTED BY

SYM	DATE DISCD	WDC	JCN	TRANSFERRED BY

DISCREPANCY

DATE CORRECTED

DN

SYM	DATE DISCD

DISCREPANCY

DATE CORRECTED

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SYM	DATE DISCD	WDC	JCN

DISCREPANCY

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AFTO FORM MAY 73 781A **MAINTENANCE DISCREPANCY AND WORK DOCUMENT** PREVIOUS EDITION IS OBSOLETE

*U.S.Government Printing Office: 1973 — 759-796/7002 Region 5-11

Dear H. S. Flyer,

IAW Maint policy of ans all req for info about act tak on rpt write-ups each of ur gripes and act taken is listed no matter how minor or chicken they are.

Hyd — System #1 press went to zero after 30 mins of flight . . . (this gripe is really nitpicking). Serviced system. Ground check okay as it has the last 10 times.

Eng — Left outboard engine runs rough with evidence of fire . . . Checks good visually — next pilot check.

Elect — Gyro tumbled on approach . . . Checks okay on ground. (If it won't quit for us we can't fix it, can we?)

ADS — Could not jettison heavy equipment loads . . . Other aircraft had same problem. Suspect bad lot of pallets. (Just to show we are really interested, we are writing a UR on that lot of bad pallets.)

Comm — Tacan azimuth and DME inoperative and OFF flag stays ON . . . Unable to check on ground since local tacan is unreliable. (You could use the radar and ADF you know.)

Radar — Presentation fuzzy with no discernable targets in operate . . . Ground checks okay. (To show how hard we try to please you guys, 90 percent of the boxes we pull on your nitpicking imaginary gripes get sent back to us bench checked okay from Radar Shop.)

As you can see we have thoroughly checked all your complaints, most of which are realy minor write-ups that you really shouldn't take up our important time with. The insinuation that you would go directly to the big boy himself wasn't missed. We happen to have some pictures of him with some honey his wife would just love to see.

Yours for good and safe flying,
Your Maintenance Crew

'Nosey' Aircraft

The throttle would stick during a descent or nose low attitude but always broke free when the C-130 pilot brought his bird to a nose-up attitude.

It was number 3 throttle which was binding just above the flight idle position and no one on the crew could figure out why.

The pilot's experience told him that such a condition doesn't lend itself to a great deal of experimenting, so he landed and terminated the mission.

The condition could not be duplicated during ground run-up and maintenance personnel could find no defect. But the FCF pilot had better luck. While he was taxiing down a sloping ramp, the throttle stuck again.

This time, mechanics discovered that a set locking screw on a shaft drive gear was missing. This allowed the gear to move off the shaft, thus locking the throttle linkage.

Investigators suspect the set screw was left out during engine overhaul.

Door To Door

A C-141 was taxiing out of its parking spot when the pilot heard a loud bang. He promptly brought the aircraft to a stop. The scanner deplaned and soon confirmed the crew's suspicions. A tire had blown out and the gear door was punctured.

What had caused a blown tire during this seemingly routine block-out? The answer was found not far from the blown tire. The external door handle on the crew entrance door had fallen off within the first ten feet of roll and the tire had rolled over it. Propelled or flipped by the force of the blowout, the handle shot through two gear doors, tearing a six-inch hole in one and a two-inch hole in the other.

An investigation revealed that the door handle had not been installed properly. The retaining pin attaching the handle to the door did not mate with the handle, and apparently had been left that way after the last maintenance was performed on the door. The only thing securing the handle to the aircraft was a small metal clip mounted on the crew door.

FSK Finale

The last dummy has been dropped. We thought all whopper pilots would be pleased to learn that fire suppression kits (FSK) have been literally dropped from ARRS. You Huskie drivers won't have to worry about your fast fingers anymore — at least not in relation to the automatic sling release button.

In 72 we had five kits accidentally dropped. So far in 73 — none. And since we are no longer using them we won't have any more.

Does SID Know?

One way to be sure of terrain clearance and obstructions during a standard instrument departure is to check the published departure against the instrument approach procedure chart.

It won't take long and you could find obstructions along your proposed flight path which may not be printed on the SID. Another thing you'll find is the 25 nautical mile minimum safe altitude and the 100 nautical mile emergency safe altitude. All of this could mean a great deal to you should an emergency interrupt your departure plans.

Since not all airports have posted ground check points, the approach chart is also an ideal reference for checking the bearings and distances to NAVAIDS in the airport vicinity.

So, don't short-change yourself during a departure. Know all you can about where you're going.

— USAF Instrument Flight Center

No Place to Cool It

Aircrews, where do you cool your juice? Seems like some C-141 fliers, to refrigerate cans of fruit juice and bottles of soda, have been putting them above the left hand pitot static drain box. This seems to be a space between the aircraft skin and the interior trim of the aircraft which gets a lot of use. It's a cool idea — until the cans resting against the pitot-static plumbing wear through the aluminum lines, causing a leak and loss of the CADC system. When the airspeed and altimeter go haywire, things in the cockpit warm up quite quickly.

A recent hazard report points out that storing foreign objects such as drink cans and bottles in the pitot static drain area is a no-no. Cool that, guys.

Qs

Double Trouble

This one is enough to get the attention of any pilot, regardless of the type aircraft he flies, but C-9 throttle pushers in particular should give it an especially thorough look.

The crew of a DC-9 had initiated what they thought was going to be a normal approach. All was going well until the airliner ran into heavy rain. Suddenly, without any previous indication of malfunction, both engines flamed out.

Quickly switching to ignition override, the crew managed to relight the left engine. The right engine would not restart. It was shut down and the plane landed without further problems.

This confirms again that neither heavy rain nor thunderstorms is a safe place for a flying machine.

Special Fasteners Incorporated

(Note: Keep out of view of IG and QC inspector)

Eccentric Bolt

For use in hole where c'sink is not concentric with hole.

E. M. Rivet

Used for short edge margin. Rotate rivet to obtain the greatest E.M.

Binocular Bolt

Designed for double drilled holes.

Flair Bolt

Best for holes oversized on one side of part only. Note: Nut starts hard — goes easy.

Wye Bolt

For holes double drilled on one side only.

U-Joint Bolt

Use in crooked holes. Suggest tapered washer.

Telescopic Bolt

Great for parts where grip length is unknown.

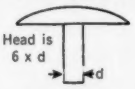
D'bbl C'sink Bolt

For use in holes where understructure was c'sunk in error.

Off-Set Bolt

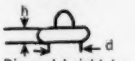
For use where holes mismatch.

Cover-up Rivet



For use in assy's having hole in one part really screwed up.

Rivett Butt



Dia and height to conform to mil spec

Install in those hard to buck spots. Insert short rivet and glue special butt to opposite side.

Nail Bolt

Tapered fluted shank. To be hammered into loused up plate nut that's too hard to replace.

— Iowa Aviation Bulletin

Inversion Gas Trap

The IP on a C-141 transition mission began to feel a bit queasy and asked if anyone else was having similar troubles. Receiving a unanimous "yes" from the crew, he landed and surrendered all souls to the fly docs. The crewmen all recovered quickly and no positive cause was found. However, the symptoms were a lot like those experienced by crewmen exposed to smoke from burning gunpowder.

With a cry of "Aha!," the friendly doc put the facts together: A burning ammunition train was in the area; an inversion existed which kept the combustion products from dissipating freely; and the crew had been flying just beneath the inversion top in the zone of max fume concentration.

Lesson: All that garbage trapped by an inversion may be hazardous to your health.

Pills Can Cause Spills

As his bird climbed through 6,000 feet, the instructor pilot glanced at the altimeter. He was shocked to find it quite blurred.

A few seconds later he experienced dizziness, accompanied by a fullness in his right ear. He was also becoming disoriented.

Hypoxia? Not very likely during climbout through 7,000 feet with a perfectly operating oxygen system.

Confused as to what was happening, the instructor decided to get the aircraft back on the ground as soon as possible. During the descent, his symptoms compounded. His right ear now developed a block and all efforts to clear it failed. Through considerable effort, the instructor managed to maintain consciousness and got the aircraft on the ground safely.

What might have developed into a major air disaster was triggered by the pilot's attempts at self-medication for a head cold. In this case, the medication induced severe vertigo and spatial disorientation.

When was the last time you flew after having taken medication? Did the flight surgeon give you his okay, or did you bother to consult him?

The pilot in this story survived the after effects of this dangerous game. You and your crew might not be so fortunate.

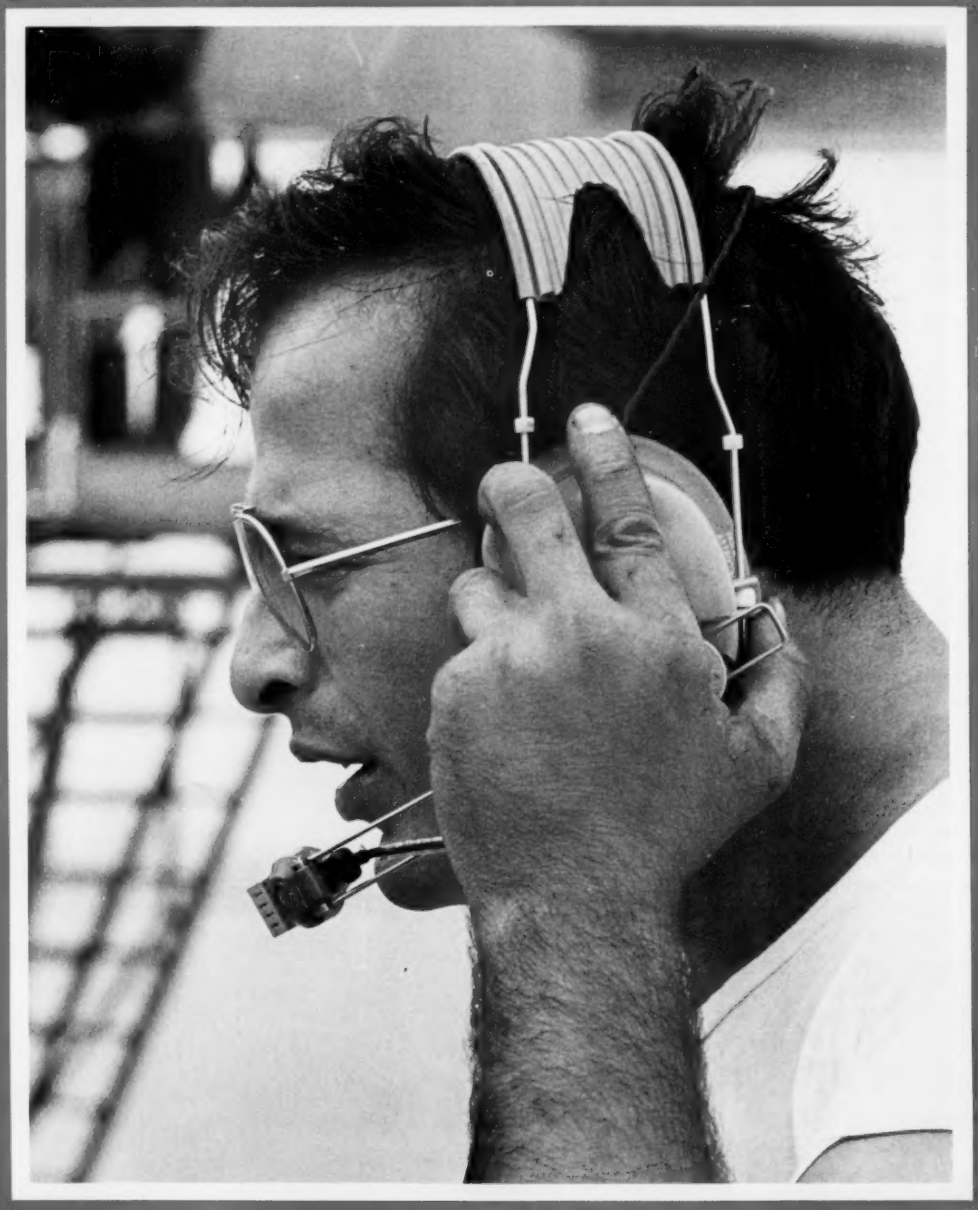
after deadline . . . .

NON-ROUTINE LANDING -- Landing roll-outs are routinely a piece of cake and aren't very likely to cause problems for experienced pilots. Right? If you answered that question affirmatively, then you may be headed down a path which could transform your next routine landing into a nightmare.

A recent T-39 major accident features only a few of the many hazards which should be considered during the final phase of any landing, particularly when you're aiming for a wet runway. There was a slight tail wind at the time and the runway was wet, but the instructor pilot decided not to land on the reciprocal runway. After touchdown, the pilot retracted the flaps and began braking. The left engine was shut down mid-point down the runway. With only 2,000 feet left, the pilot saw that braking was ineffective and called for assistance from the instructor who took control and continued heavy braking. Skidding left, then right, the airplane careened off the runway over a drainage ditch, runway barrier, and light fixture. Both main gear collapsed. The instructor pilot was charged with supervisory error in that he failed to recognize in advance the hazards associated with hydroplaning and landing on a slippery runway at a heavy gross weight.

Hydroplaning is one of a pilot's worst enemies. It can and does sneak up on even the most experienced pilots. Remember that the next time you consider an approach to a wet runway.

WIRED FOR TROUBLE -- A sharp-eyed C-5 preflight crew was dismayed to find that when actuating the rudder trim switches the rudder deflected in the wrong direction.

A close look into the system revealed that the rudder trim wiring was reversed. The rudder trim had worked properly until a trim switching panel was replaced the day before. But why had the cross-wired rudder trim functioned properly before? Well, the trim switching panel wiring was, likewise, reversed, causing the circuits to match up.

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